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Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington D.C. 20554

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Federal Communications Commission
Office of the Secretary

In the Matter of		
Advanced Television Systems	)	
and Their Impact on the	)	
Existing Television	)	
Broadcast Service	)	
		MM Docket NO.87-268
Review of Technical and	)	
Operational Requirements.	)	
Part 73-E. Television	)	
Broadcast Stations	)	

REPLY COMMENTS OF BTA ON THE NOTICE OF INQUIRY

On August 20, 1987, the Commission requested comments in regard to the "Advanced Television Systems." In response, numerous organizations, institutes, companies, and

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individuals have submitted their comments. The Broadcasting Technology Association (BTA) has examined and discussed all these comments with great interest. This is the response of the BTA to the comments submitted.

1. GENERAL

a) Definition and coexistence of EDTV and HDTV

First of all, it appears that there is confusion as the ATV concept varies from comment to comment. As noted in the comments from such organizations as ATSC, Time Inc., NAB, NYIT, NAPC and CBS, the most important factor for ATV is the trade-off between overall quality (picture and sound) and bandwidth. We feel that much of the confusion in the discussion regarding ATV has resulted from a lack of proper appreciation of this fact.

In order to eliminate this confusion, it is important to clearly distinguish between HDTV and the system aiming at the improvement of NTSC while maintaining the 6MHz band. The latter is called "EDTV" in Japan.

HDTV is the television system fulfilling the guidelines described in the CCIR Report 801-2, Annex III. As for the

production standard for HDTV, a common system is being adopted as the national standard in the U.S.A., Canada and Japan. As commented by the ATSC, the 6MHz channel bandwidth will be insufficient to provide the quality for true HDTV. In that sense, the MUSE system, with its baseband of 8.1MHz, is a good compromise between quality and bandwidth.

On the other hand, EDTV encompasses both "Enhanced Television" and "Extended Definition Television" as defined in the CCIR Report 1077. We do not feel that the eventual ATV must be either HDTV or some form of EDTV, but rather that the coexistence of HDTV and EDTV will be a valuable spur to the development of future television.

b) ATV receivers

We agree with the comments of Time Inc. to the effect that an HDTV receiver capable of displaying NTSC, EDTV and VCR HDTV as well as Cable HDTV can be manufactured. However, in order to receive multiple ATV systems, which use diverse baseband signals and broadcast bands, with a single receiver, complex functions will be required, resulting in the danger of greatly increased cost. Accordingly, we feel

that, as far as possible, a common or a family of baseband signal formats is desirable for ATV systems. We also consider it desirable that the number of broadcast bands and cable transmission bands should also be kept as small as possible. However, this does not mean that these must be limited to signal formats compatible with NTSC and currently- used terrestrial broadcast bands.

In Japan, NTSC receivers capable of receiving both terrestrial and satellite (DBS) television broadcasts are already being marketed. Development is also proceeding on a DBS receiver which will be capable of receiving both the NTSC and MUSE systems.

c) Importance of actual proof

The BTA has suggested EDTV and HDTV as ATV systems, and a number of other systems have also been suggested by other organizations. However, as is evident from the opinions of CBS, etc., when one considers that packaged media with a picture quality superior to current terrestrial broadcasts will appear in the near future, and that the equipment for HDTV production is already at the stage of practical

utilization, there is a clear need for the prompt standardization of ATV. To this end, it is necessary to give importance to actual results in such areas as technological practicability, picture quality evaluation, and field tests.

2. EDTV

The EDTV system currently under development in Japan is a new system which will improve picture quality and reduce ghost images, while maintaining compatibility with the existing NTSC system. Since this EDTV system relies for many of its features on future technological advances, we are tentatively planning to proceed with the development of the system in the form of two generations.

The first-generation EDTV will aim at improving picture quality by combining several enhancement methods, while leaving the aspect ratio unchanged. In terms of the categories specified by the CCIR Report 1077, this first generation thus falls into the area of "Enhanced Television," and its implementation is planned from 1989. The improvements are mainly achieved by the use of

high-resolution signal sources, and TV receivers with three-dimensional Y/C separation and progressive scan. To these features will also be added a reference signal for eliminating ghost images. These developments are considered the basic technology for progress toward the second generation.

The second-generation EDTV will aim at an even greater improvement in picture quality by increasing the aspect ratio and by other methods. It is thus equivalent to "Extended Definition Television" as defined by the CCIR Report noted earlier, and its development will proceed while assessing the technological advances from time to time.

As can be seen from the comments of Faroudja Laboratories and the David Sarnoff Research Center Inc., some of the systems proposed in reponse to the Notice of Inquiry are close to those under consideration for Japan's EDTV. Therefore, there is a very strong possibility that a unified EDTV system will be developed between Japan and the United States.

Unification of the system will have great merits from the standpoint of the electronics industries and the exchange of

television programs; but the realization of such unification will necessitate a high degree of exchange of information between the two countries. BTA would like to express an active and positive intention in this regard.

3. HDTV

a) Production standard

With regard to the production standard for HDTV, it is our opinion that the 1125/60 system proposed by the U.S.A., Canada and Japan as the international standard should be used.

The 1125/60 system not only fulfills all the requirements for HDTV stipulated in the CCIR Report 801-2, but also produces a picture quality equivalent to that of 35mm film. It is also the only system with actually proven results. The standard of this system has already been adopted by the SMPTE and the ATSC in the U.S.A., and by the BTA in Japan, and standardization procedures are currently underway in Canada as well. CBS, the NCTA (National Cable Television Association) and the MPAA (Motion Picture Association of America) also expressed support to this standard in their

comments.

Cameras, VTRs, tele-cine equipment and other studio equipment, as well as converters from television images to film have already reached the level of practical implementation. Various programs have been produced using this equipment in the United States, Canada, France, Italy, West Germany and Japan, and their practicability has been proved, including application to film production. The 1125/60 system also allows easy conversion to both the existing 525/60 and 625/50 systems, and its technology has already been demonstrated.[1]

In contrast, the 1050-line system proposed by the NAPC would not only close the door to world-wide unified standardization, but would also be more difficult to convert

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NOTE 1:

1125 lines have a simple integer ratio to both 525 lines (15:7) and 625 lines (9:5), with the result that it is the only proposed system allowing easy conversion to currently-used systems.

to the 625-line system than would the 1125-line system. In short, the adoption of the 1050-line system would represent a block in the way of program exchanges with those European countries which currently use the 625-line system, and would be unprofitable to the United States, since it would represent a hindrance to its great ability to provide programs to other parts of the world.

b) Transmission systems

HDTV transmission tests with the MUSE system in the United States, Canada and Japan have shown that FM transmission (both DBS and terrestrial) in the 24 - 27MHz bandwidth, and AM-VSB transmission in the 12MHz bandwidth provide excellent picture quality with little degradation from the HDTV source signal (see Appendix 1 to the comments submitted by the BTA in November 1987). It is felt that the former method is appropriate for DBS, while the latter is suitable for terrestrial broadcasting and cable TV.

Further, when two non-contiguous channels are used for

terrestrial broadcasting, the difference in transmission characteristics between the channels will cause picture degradation, and a receiver for such a system would have to be equipped with two independent receiving circuits, making it undesirably costly.

c) Compatibility

We feel that it is basically desirable that ATV systems have compatibility with the NTSC system. If compatibility is sought at the cost of all else, however, optimum results in improving the picture quality will not be obtained, while on the other hand, the signal format and receiver circuitry will become more complex.

In addition, a fundamental difficulty exists in the NTSC system with regard to separating the luminance signal and chroma signal. As a result there is a limit to improving the picture quality of any ATV system that is fully compatible with NTSC, while a non-compatible system has the possibility of a greater degree of improvement in picture quality, since there is greater freedom with such a system.

Even a system which is not bound by the compatibility

issue can easily be provided with a low-cost NTSC converter, if the signal format is appropriate, thus making it possible to receive ATV programs on conventional NTSC receivers. An example of this kind is the MUSE-NTSC converter that was described in the comments submitted by the BTA in November 1987. We feel that this method of using a converter is the most realistic, both in terms of its compatibility with new broadcast bands (including DBS), and in terms of the total transition from NTSC to ATV.

4. CONCLUSION

As we have noted thusfar, it is necessary to develop and realise HDTV and EDTV, while making a clear distinction between these two systems, by utilizing the advantages and characteristics of each system.

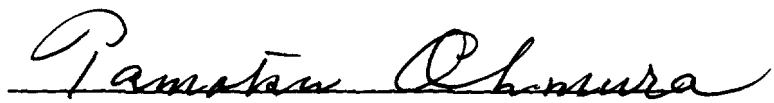
Since EDTV is an enhancement of the NTSC system, it is desirable that its development should be carried out through close cooperation between the United States and Japan. Toward this end, the BTA is prepared to participate in such cooperative activities.

As for the production standard for HDTV, the 1125/60

system is the only proven one in existence. As a result, we would like to suggest that the Commission promptly establishes standards for a transmission system based on the 1125/60 production system. And the BTA also wishes to further contribute to the early introduction of ATV in the United States.

Respectfully submitted,

BROADCASTING TECHNOLOGY ASSOCIATION, JAPAN



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